Light and Lighting

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Contents

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The official journal of the Illuminating Engineering Society.

Lighting Engineers

THE supply of properly qualified lighting engineers is growing at a rate which appears to meet the demand, but there is little doubt that the demand is not as great as it should be. A great deal of lighting—especially in the important domestic field—is done by persons who are unversed in the fundamental principles of lighting design, and in other fields also there is certainly too little employment of trained lighting engineers. It should be more widely known that, as in other branches of engineering, qualification entails a suitable period of practical training, coupled with a comprehensive knowledge of the theoretical and practical aspects of illuminating engineering as attested by success in the recognised examinations covering the subject. It should be more widely known that there is a Register of Lighting Engineers kept by the Illuminating Engineering Society, and that inclusion in this Register means that a member has fully satisfied the prescribed conditions of competence to practise as a lighting engineer. And it should be appreciated that a proper supply of qualified lighting engineers will not be forthcoming for the future without the incentive of adequate financial reward.

Notes and News

I.E.S. Programme

The I.E.S. programme, just issued, for the 1952-53 session includes the second Trotter-Paterson Memorial Lecture, which is to be given by Dr. E. D. Adrian, O.M., President of the Royal Society and Master of Trinity College, Cambridge. The Society is to be congratulated on securing such an eminent scientist to give this lecture, the subject of which is announced as "The Nervous Reactions of the Retina." Dr. Adrian is a leading authority on electrical nerve impulses and published his first work on the subject nearly 20 years ago. Other workers in this field have confined themselves to particular parts of the nervous system but Dr. Adrian's work has covered the whole of the nervous system and no doubt in his lecture will relate the functions of the optic nerve to the system as a whole. This lecture will be of the greatest interest to those in the lighting and allied fields, for though we appreciate that we really see with our brain using the eye as an intermediary little is known of the connecting link.

Other subjects covered by the London programme include factory lighting, a subject which has not been discussed for a long time, but one which can hardly be dealt with adequately in one meeting. However, many lighting engineers are daily concerned with this subject and will welcome a new approach to the subject.

It is encouraging also to note that the programme also includes a joint meeting with the R.I.B.A. Architects will also, no doubt, be interested in the discussion to take place on the recently issued report on the lighting of offices. By the time this meeting takes place the report will have been out for nearly a year, but this should give both lighting engineers and architects an opportunity to study its practical implications.

We are pleased to note that one of the informal meetings is to be devoted to a number of short papers by student members, a plan which has also been adopted by one or two of the centres. Students get little opportunity to contribute to the activities of the Society and are very hesitant to speak at sessional meetings in front of their seniors. We understand that every help will be given to students wishing to take part in this informal meeting and students should welcome the chance of gaining experience in the preparation and presentation of a paper.

A visit to the Ford Motor Company's works at Dagenham on October 29 comes appropriately just before the sessional meeting on factory lighting. The intention is for the party to travel to and from Dagenham by coach from Victoria-street, leaving at 12.45 p.m.

An innovation is the one-day summer meeting arranged jointly by the Centres in the Midlands which is to take place at Nottingham on July 10. It is understood that there will be two papers at this meeting, one in the morning and one in the afternoon, with social events to make a full and interesting day. Details of the meeting will be announced in due course.

Fluorescent Street Lighting in Germany

An account of last year's two-day meeting of the German Illuminating Engineering Society in Dortmund has just been published in the form of a well-illustrated booklet of some 63 large quarto pages. It is entitled "Street Lighting by Fluorescent Lamps," as this

was the theme of the meeting, and, in one aspect or another, was the subject treated by the six authors, whose papers are given in full, accompanied by an account of the discussion which followed.

An introductory paper by Prof. W. Arndt dealt with what he considered to be the "burning" problems of street lighting. One of these was to obtain a proper consideration of the economics of street lighting in relation to accident figures; the other was to devise some more satisfactory method of appraising the quality of an installation. Mr. G. Laue, of Hanover, then described tests of fluorescent fittings carried out under all kinds of weather conditions, and he was followed by Dr. A. Rapp, who recounted the arguments which had led the town of Ulm to adopt fluorescent street lighting. One of these was that with wet streets there was much less glare in a fluorescent installation than in one of filament lamps, and his point was well illustrated with photographs of the same street under both wet and dry conditions, first with filament lamps and then with fluorescent.

In a paper by Mr. H. Jacobs there was an interesting account of the method adopted to ensure starting in exceptionally cold weather. In multi-lamp fittings, one lamp out of three or two out of four were of the special type designed to start at low ambient temperatures, the other lamps being of a normal type. The special lamps were switched on first, and, after these had been running for an hour and had raised the temperature within the fitting, the other lamps were brought into use.

Dr. von der Trappen's paper gave a general account of the street lighting of Dortmund, where the meeting was held. A good deal of technical information regarding the fluorescent installations, and a number of excellent photographs, are included in a separate section of the booklet.

The final paper was by Mr. G. Niehage, of Dortmund, who dealt with the use of audio frequency remote control. Although not strictly on lighting, the paper was very germane to the subject of the meeting because the author pointed out that the use of condensers for power factor correction interfered seriously with the performance of a remote control system, using audio frequency impulses.

There was a lengthy discussion on the various points raised by the authors. For instance, J. Müller advocated the use of lamps with their axes parallel to the street instead of perpendicular to it. He claimed that this gave much less glare, but the spacing he used was very close, viz., 33 ft. to 49 ft. in one street, and 49 ft. to 100 ft. in another, with a mounting height of 23 ft. The opposite view was expressed by Mr. Bauer, of Dortmund, who showed photographs taken from the driver's seat in a car, and pointed out the uniformity of the bright background produced by lamps arranged with their axes across the roadway. Other speakers joined in the argument, and pointed out the influence of the spacing on the result produced.

The use of cold cathode lamps for street lighting was described by Mr. W. Stanull, who showed a diagram of a fitting in which the tube was in the form of a conical spiral, but there seems to have been no other reference to the use of this form of fluorescent lamp.

There is clearly a great deal of interest in fluorescent street lighting in Germany, and one town seems to follow with great interest the experience of another, perhaps more enterprising or with greater resources at its disposal. Apparently one of the chief causes of hesitation in many quarters is doubt about the ability of the lamps to start up in very cold weather. This was referred to over and over again, not only in the papers, but also by many speakers in the discussion. Some advocated the use of an entirely different form of starter.

The meeting was attended by some 400 lighting engineers, and was evidently most successful. It would be surprising if it did not result in an even more rapid development of fluorescent street lighting throughout Germany in the immediate future.

One of the many attractive scenes created by floodlighting in Bruges.

Floodlighting in Belgium

By A. BOEREBOOM*

In the following article the author makes a very good case for the use of floodlighting to supplement street lighting, quite apart from its value in the enhancing of public buildings. It is also pointed out that floodlighting installations need not be costly to install or to run.

In recent years, and particularly since the end of the war, considerable progress has been made in public lighting in most countries. Everywhere new installations are being carried out and existing ones improved or extended; there is a general insistence on more light, greater comfort for road users and greater facilities for the movement of traffic.

This is due to some extent to the increase in the volume of road traffic. The greater the number of vehicles on the road the greater the risk of glare from oncoming headlights, and therefore the greater the necessity to light the roadway. But even if the projection of sufficient light on to the roadway enables traffic to move freely without the use of headlights it is still possible that the pavements and surroundings may remain in darkness, e.g., as is the case with the façades of houses when a cut-off type of street lighting lantern is used. The same thing applies to public buildings and places of interest, particularly in old towns, which should be shown up at night instead of being lost in gloom.

After taking into consideration the more active lives now led by most people, the increase in night-time traffic, the greater number of people who are now able to take holidays and the growth of the tourist industry, those responsible for public lighting are having to pay more attention to lighting so as to increase both the comfort and pleasure of all kinds of road users—motorists, pedestrians, cyclists, tourists, etc. A happy result of this is that in Belgium more and more attention is being given by almost every town to the floodlighting of principal buildings and monuments. This article describes some of the main floodlighting installations in Belgium.

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Light Sources and Fittings

The technique of floodlighting is quite different from that of street lighting. In street lighting one frequently starts with a particular light source, having taken into consideration matters such as colour rendering and the economics of the light source. The problem is then one of siting to obtain the best results. In floodlighting, the problem is different; the starting point is not the light source or the siting, but the object to be lighted, and it is in relation to that object that the light sources and their siting have to be studied.

The colour of the light is most important. Bricks take on a warm aspect in the light of sodium lamps whilst blue or grey stone can be enhanced by means of mercury vapour lamps. A mixture of these two sources can also give a satisfying effect, warmer than the mercury and less golden than the sodium. Experiments have been carried out using coloured fluorescent lamps, but it would seem that these lamps are more suitable for the illumination of gardens and parks and other decorative effects. An enclosed fitting for fluorescent lamps is expensive and is hardly used.

Among the fittings generally used in Belgium, the following are worth mentioning:—

(i) A projector housing two high-pressure mercury vapour lamps giving 40,000 lumens for a total input of 950 watts. It is made of aluminium 2 mm. thick and equipped with an efficient ventilation system. It is fitted with two parabolic anodised aluminium reflectors.

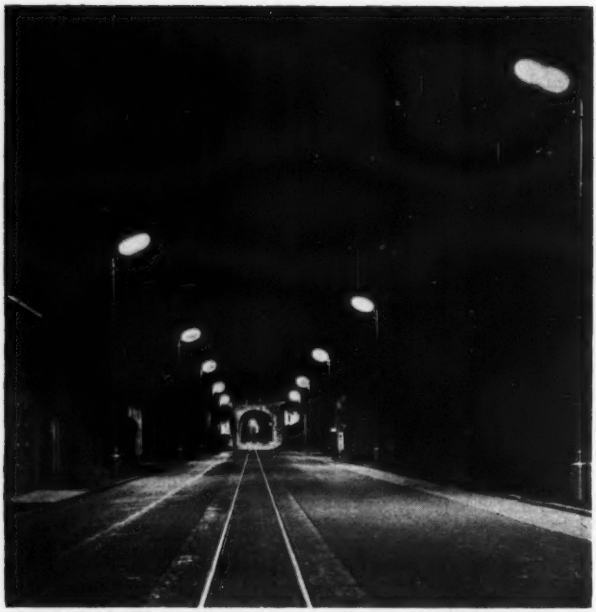


Fig. 1. *Showing an example of tunnel floodlighting to make the tunnel more conspicuous and to improve background brightness.*

(ii) A projector designed for use with two 140-watt sodium lamps giving a total luminous flux of 20,000 lumens for a total of 330 watts. The characteristics of the fitting are the same as the first type of projector.

(iii) A projector for use with special mirrored 150-watt tungsten lamps or with 125-watt mercury vapour lamps. It is made of aluminium 1.5 mm. thick and is completely airtight. A ball-and-socket joint allows free movement in all directions.

The choice of the type of fitting and lamps depends on the result required. A diffused beam would be used for lighting a large surface, whilst a projector with a concentrated pencil beam to outline detail is necessary in other cases. Certain fittings which are mounted high up have to be completely airtight; others can be open.

Floodlighting and the Lighting of Public Highways

In the lighting of public highways the light distribution is chosen so that the surface of the road presents a brightness as uniform as is possible so that the obstacle,

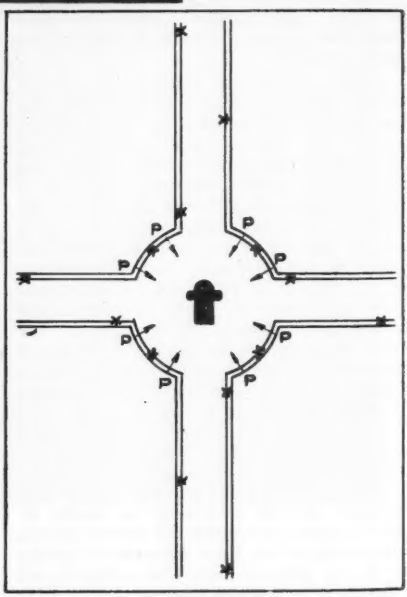


Fig. 2. *Siting of floodlights at a road junction.*

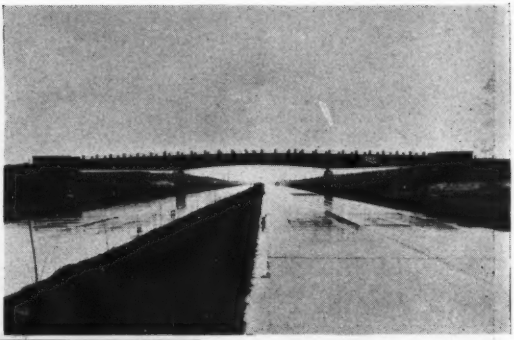


Fig. 3. *Daylight view of a bridge on the Brussels-Ostend road.*

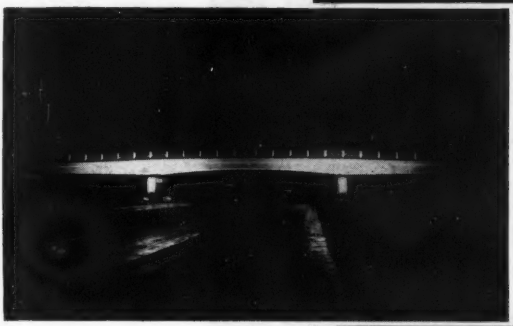


Fig. 4. *Bridge shown in Fig.* 3 *floodlit at night-time.*

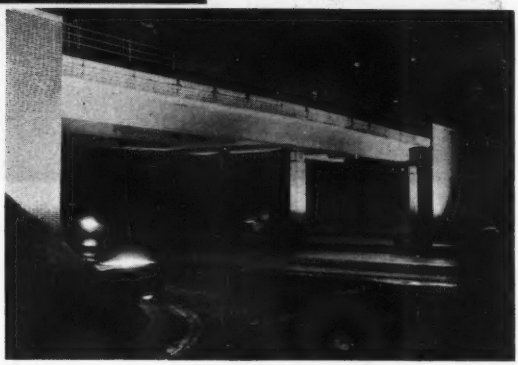


Fig. 5. *Showing the brick emplacements accommodating the floodlights.*

whatever it may be, makes a silhouette against the lighted surface.

But a road can present places where the traffic is more dangerous or more difficult; this is the case principally in connection with railway bridges, tunnels, bottle-necks, deviations caused by monuments, etc. In such cases it is important to draw the attention of the motorist specially to these circumstances, as he has to be able to distinguish the obstacle from far off. The lighting of these places is not, therefore, confined merely to the roadway itself but also to the obstacle.

An application of this on an important road lit by fluorescent lamps in non-cut-off fittings is shown in Fig. 1. In spite of the fact that these fittings have a large luminous output, it has been found necessary to brilliantly light the walls of the

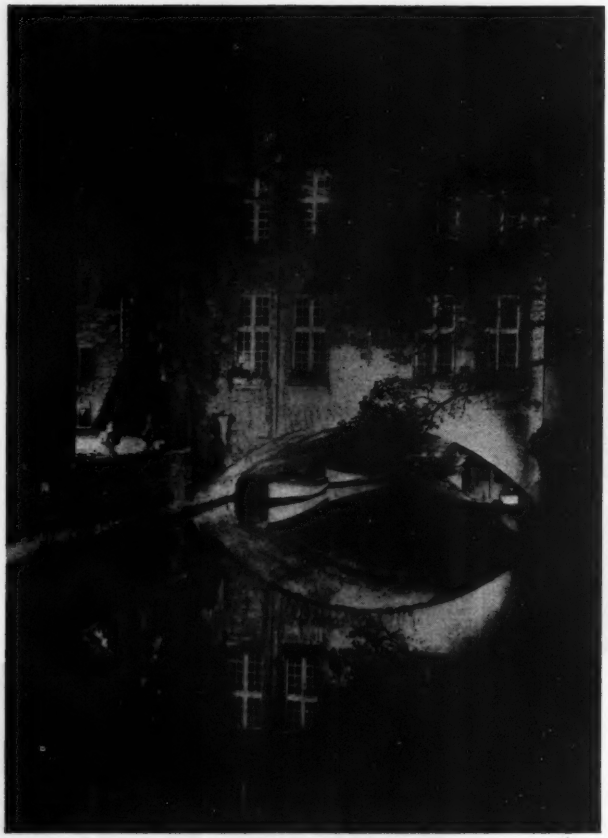


Fig. 6. Lighting of the Musée Brangwijn at Bruges, for which two 125-watt mercury lamps are used.

tunnel by means of two projectors. The position of the tunnel on the road presents, in effect, a narrowing of the road and it is important to draw the attention of the motorist to this fact. It has been stated that the lighting by floodlights of these walls, as well as the roof of the tunnel, considerably increases the comfort of motorists who in some way seem attracted towards the brilliantly lit tunnel.

It also happens, just as frequently, that a motorist may come upon a building at a road junction with little or no warning. Such a building, maybe a church, town hall, etc., is very often placed in the middle of an agglomeration of roads or in the middle of a public square so that the traffic has to go round it. When the road is lit by means of cut-off type lanterns, these buildings are not, or hardly, visible and the motorist senses in front of him a dark mass—unpleasant and uncomfortable—round which he has to drive. Floodlighting of the monument as well as enhancing its architectural value would certainly facilitate the movement of traffic by the greater feeling of well-being which it would give to the car drivers. Floodlighting of these buildings is therefore necessary. It must not be considered as a luxury; on the contrary it must form part of public lighting and cannot be dissociated from it.

Fig. 2 shows an application of this principle. With projectors at the positions marked (P) the central building is floodlit so that it is rendered visible to the traffic

Fig. 7. A courtyard off the canal floodlit with two 400-watt mercury lamps situated on the opposite bank.

coming from any of the roads which lead on to the junction.

Another application of floodlighting is on "auto-routes." These are reserved exclusively for fast traffic and are essentially dual carriageways. With a view to reducing the danger of glare from oncoming traffic, the central division between roadways is generally planted with hedges and plants, thus forming a screen. As a rule these roads are not illuminated. The motorist who travels along such a road sees the countryside stretching before him with nothing else to attract his gaze. This is particularly tiresome at night and all those who have made long journeys on German or Italian roads can describe the monotony it produces. In addition one never knows exactly where one is.

This discomfort in driving can be partially alleviated by the illumination of several possible features on the road. It is for this reason that on the Brussels-Ostend road it has been decided to light the bridges which cross the route. In thus underlining the aesthetic character of these features, one succeeds in this way in creating for the motorist travelling at night points of interest which break the monotony of the route. Figs. 3 and 4 show a daylight and night-time view of one of these bridges.

It is important, of course, to avoid glare from the light sources used in this way reaching the eyes of road users. This is

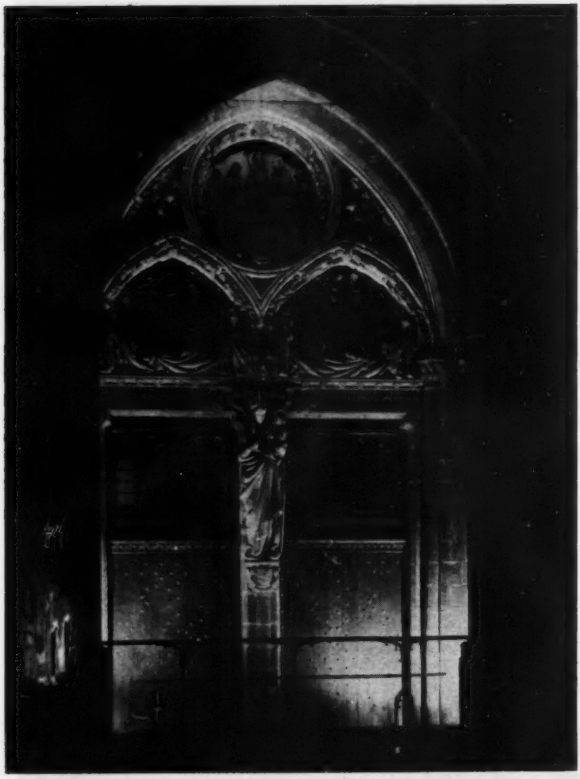


Fig. 8. The doorway of the hôpital St. Jean at Bruges showing how details which might pass unnoticed by day can be attractively illuminated by night. A 150-watt tungsten lamp is used at the top of the doorway and two 125-watt mercury lamps are used to light the bottom of the porch.

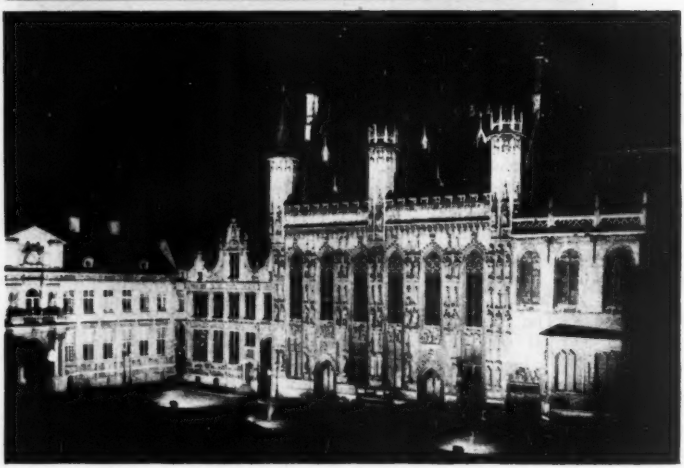


Fig. 9. Place du Bourg at Bruges, where five projectors, each housing two 140-watt sodium lamps, are used.

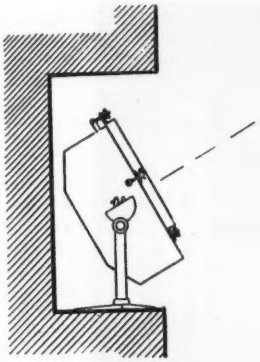


Fig. 10. *Showing how masonry can be cut away to accommodate projectors.*

done by placing the projectors in small brick emplacements fitted with screens so that the light goes only in the direction of the bridge. Examples of these emplacements can be seen in Fig. 5. Each projector is fitted with two sodium vapour 140-watt lamps (10,000 lumens) and the whole is protected by a grill. Lighting and extinguishing is automatic.

Floodlighting in Towns

It is in the crowded built-up areas that floodlighting finds its principal applications. It is here that the public lighting engineer must amplify his role and not limit himself by considering only the strictly utilitarian objects of lighting. On the contrary, the lighting engineer must realise the conditions of atmosphere which procure in people a sense of well being and comfort. He must also collaborate with the architects and local authorities to beautify the towns and the places of communal life.

Many towns in Belgium have made a remarkable effort to light public buildings and picturesque sites. Among the most important of these are Bruges, Antwerp, Malines, Courtrai, Mons, Namur, and Schaerbeek.

The most outstanding example is that of the town of Bruges, which was the first town in Belgium to adopt floodlighting on such

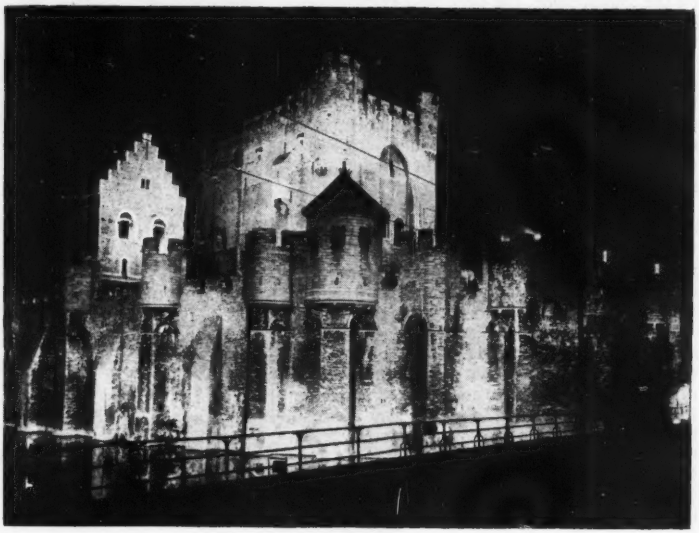


Fig. 11. *The Chateau des Comtes at Ghent. Mercury lamps are used for the tower and sodium on the outside walls.*

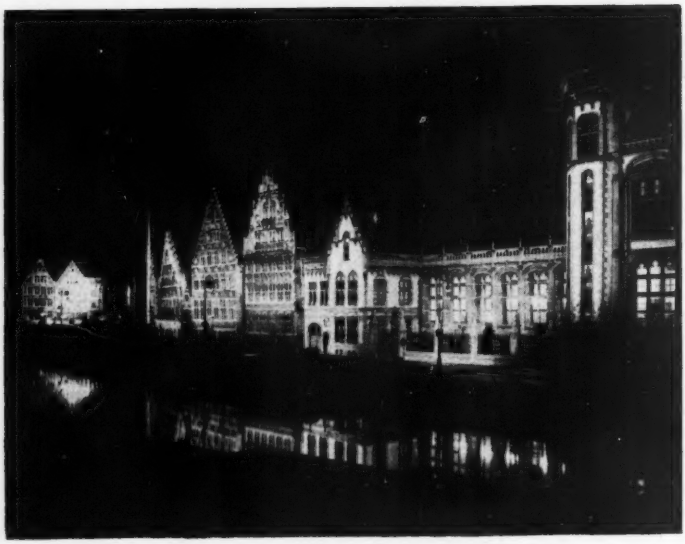


Fig. 12. *Quai aux Herbes at Ghent floodlit with mercury lamps.*

a large scale. And the reader will excuse me if I place this town at the top for another motive—a personal one. Bruges is, in fact, my native town, and I have many memories of it and treasure many friendships made there.

Bruges, depending for its livelihood mainly on the tourist trade, has been able to preserve intact a large number of medieval buildings—witness of its glorious past. The great number of tourists visiting this "Venice of the North" usually know it only in its daylight aspect. But the lighting of the principal monuments and of a number of the quays have tempted the tourists to stay longer in the town, to the profit of the local hotel industry.

In a stretch of 1,500 metres along the canals are installed: 130 × 125-watt mercury vapour projectors, seven two-lamp 450-watt mercury projectors, 37 projectors using 140- or 65-watt sodium lamps and 15 two-lamp 140-watt sodium projectors.

The first sodium projectors were placed along the celebrated Rozenhoedkaai. In view of the success of this trial it was decided to illuminate the façades and the canals for the stretch mentioned above. And, after this, the installation was still further extended, principally by the lighting of the Minnewater and the Beguinage.

The few examples included in this article to illustrate the results achieved show,

Fig. 13. *Town Hall at Oudenaerde floodlit by sodium lamps.*

though imperfectly, the advantage to a tourist town of having its principal buildings and places of interest floodlit.

It is worth remembering that to achieve a satisfactory result it is necessary to choose a suitable light source and fitting and to take care not to dazzle those viewing the floodlighting. The sketch in Fig. 10 shows the niche cut in a wall to house a projector in one of the installations illustrated.

Figs. 11 and 12 are of installations at Ghent. The first, Fig. 11, shows the Chateau des Comtes. The exterior is lit by means of sodium vapour lamps, while the central tower is lit by mercury lamps; the contrast thus obtained is striking. The second photograph, Fig. 12, shows the Quai des Herbes. The lighting is obtained by means of 12 projectors housing 125-watt mercury lamps.

Fig. 13 shows the Town Hall at Oudenaerde. The whole is carried out by means

Fig. 14 (*right*). *Monument "Guerre des Paysans" at Hasselt.*

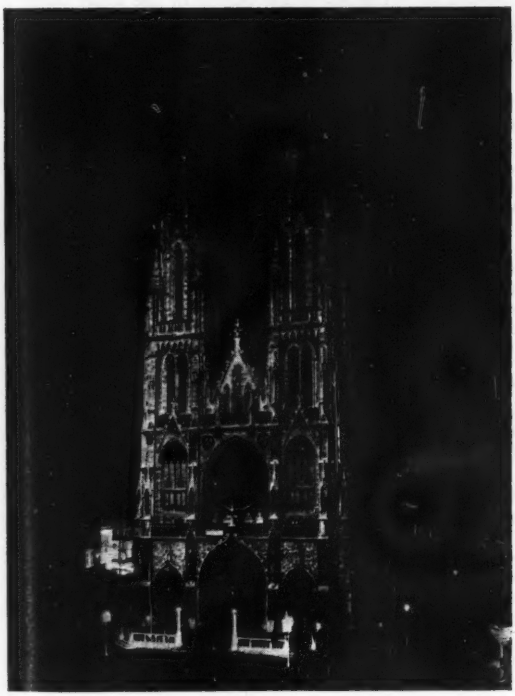


Fig. 15. *Church of St. Pierre at Ostende, for the floodlighting of which only two projectors are used.*

Fig. 16. *The tower of the Church of Notre Dame, for the floodlighting of which only one projector is used.*

of six fittings each housing two 140-watt sodium lamps. Notice the excellent effect obtained on the roof, where the stone stands out like lace. A principle to observe in floodlighting buildings of this type is that it is necessary to light the top of the building so that it stands out clearly against the dark sky.

Some commemorative monuments may also acquire a special charm when they are seen by night. Fig. 14 shows the monument "Guerre des Paysans," at Hasselt, where the front is lit by means of seven miniature projectors housing 150-watt incandescent lamps and the back by a projector housing two 140-watt sodium lamps.

Fluorescent lamps can be used with success for occasional lighting of gardens where scattering of light is permitted and where it is necessary to retain the colour of the flowers.

Cost and the Tourist Industry

Local authorities often hesitate before proceeding to carry out floodlighting installations. They are often put off by the cost, which seems to them to be high. But this is the wrong attitude, for the lighting of public buildings should not be considered as a luxury but rather as a necessity —supplementing the lighting of public highways in a most agreeable way. And very often the local authority overlooks the favourable effect that judicious floodlighting can produce on the tourist industry.

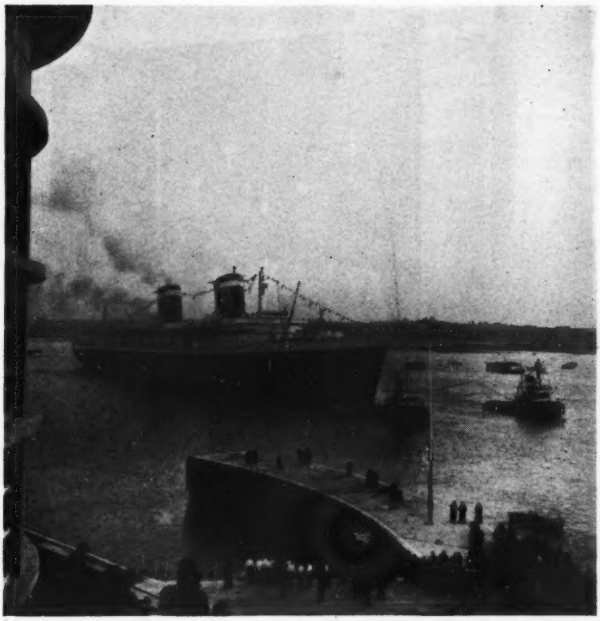
In tourist towns such as Bruges, Malines, Namur, where visitors did not previously stay more than a few hours in the day, floodlighting has provided an additional attraction which prolongs the stay of the tourists to the benefit of the hotel industry and local commerce in general. This is why at Bruges, since the installation of floodlighting, the number of tourists staying in the town between June 1 and September 30, 1951, as well as the receipts of the excursion boats which tour the quays, rose by 50 per cent. And the extra local taxes which have resulted have been able to pay for the maintenance of the installations and the cost of energy consumed by the installations.

As a final word on the supposed high costs mention may be made of two installations. The Church of St. Pierre at Ostend (Fig. 15) has been suitably illuminated by means of two projectors each taking 950 watts. The cost of the electric power consumed and the cost of the first installation were very small and the result obtained is really satisfying. Fig. 16 shows the tower of the Church of Notre Dame, at Bruges, lit by one projector of the same type.

It is hoped that this article has shown that civic floodlighting is not a luxury but a necessity and that the present-day tendency to light public buildings and places will grow.

I am pleased to acknowledge my thanks to M. Boexstael, Engineer-Director of Works, Bruges, for the information which he has been kind enough to supply on the installations in that town, as well as to the firms S. A. Philips, of Brussels, and A.C.E.C., of Charleroi, for their photographs.

S.S. United States



The new 53,300-ton flagship of the United States Lines, the *United States*, arrived at Southampton after a record-breaking maiden voyage on July 8. Though it is perhaps natural to compare this new vessel with the Cunard giants it should be remembered that she is not a luxury liner in the same sense and that there are original features in her design which must have some effect on the interior decorations and, to some extent, on the lighting.

That the *United States* is a fast ship is obvious. It is also well known that she has been designed for quick conversion to a fast troop-carrying ship, and a visit to her shows how quickly this could be done. For example, with all but one exception the public rooms are only one deck high so that bearing in mind also the lower tonnage, these rooms cannot be expected to be as spacious as those on the Queens.

Another feature of the design is the attempt which has been made to render the whole vessel fireproof by the use of metal instead of wood, by the special treatment of all fabrics, and by other expedients. The complete absence of wood panelling does produce a certain feeling of coldness, particularly in the halls and lobbies though here the feeling is considerably relieved by the warm fluorescent lighting.

The underlying theme of the scheme of decoration is the relation between the ship and the sea and sky, achieved by the use of a wide range of blues and greens. The treatment is skilful, though opinions may differ on the first-class observation lounge where blue furniture and a sea-green carpet may have peculiar effects on the colours of women's dresses.

All service power on the *United States* is alternating current and the lighting is on 115v. a.c. single phase, 60 cycle. Alternate feeders are installed on the reduced voltage load centre to ensure continuity of service in the event of a breakdown in the normal supply. In case of the failure of all or part of the ship's service electric generating plant or distribution system, a complete separate emergency supply has been installed. The emergency diesel engine driven generators start automatically in the event of failure of the normal supply, and whilst these are being connected, a temporary supply is provided from storage batteries and from a.c. generators driven by d.c. motors.

The majority of the public rooms are situated on the Promenade Deck. Starting

The first-class restaurant showing one of the metal wall panels inset with crystal glass lit from behind

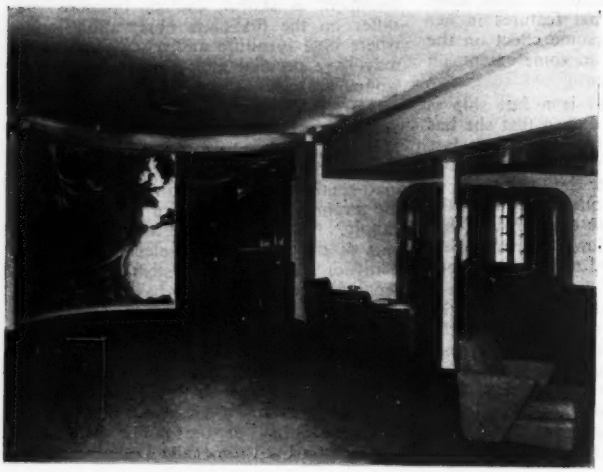
at the aft end there is the first and cabin class theatre, which seats 352. The lighting is indirect from circular coves following the shape of the room and is controlled by motor-operated dimmers.

In the lobby outside the theatre are shops lighted mainly by short fluorescent lamps in cornices with tungsten lamps to light up the displays in the glass counter and spotlights directed on to the counter top.

The first class smoking room is rather subdued in spite of 10 large recessed indirect lighting panels each of which accommodates a large number of 25-watt tungsten lamps. Narrow flush lighting panels screening 15-watt tungsten lamps also run the whole length of the windows on the port and starboard sides overlooking the Promenade Deck.

The foyer outside the smoking room is lit by three large and two small recessed coves giving indirect lighting from 20-watt fluorescent lamps, the standard fluorescent lamp in use in the ship.

The cocktail lounge on the starboard side between the foyer and the ballroom is a long



The observation lounge

gallery seating 50 people and is discreetly lighted by concealed tungsten lamps behind the banquettes enlivened by small patterned openings in the ceiling giving some direct light. On the other side of the ship is the small 50-seat first class restaurant softly lighted by means of an indirect cornice running the length of the outside wall, the other walls bearing metal panels with insets of crystal glass lit indirectly by filament lamps. The edges of these panels conceal 10-watt filament lamps which produce a soft illuminated background.

The next room forward is the ballroom lounge, the main lighting feature of which is the large dome skilfully and evenly illuminated by concealed filament lamps. Surrounding the dome and concentric with it are two coves also concealing filament lamps. The bar is partially separated from the ballroom by a glass screen and additional lighting is given by flush spotlights in the ceiling. Vertical cornices each side of the doorways are lit by 15-watt lamps.

The first-class ballroom

From the main foyer one then reaches the observation lounge and library and reading rooms, which are at the forward end of the ship. Here again the main lighting is indirect from tungsten lamps in cornices. Additional local lighting is given by standard lamps holding three 40-watt lamps for general and downward lighting and one 150-watt lamp in a reflector throwing light up to the ceiling.

The tourist theatre, seating 200, is also on the Promenade Deck and the lighting is from 15-watt filament lamps concealed behind coves which rise on either side of the room and continue across the ceiling. The lighting of the tourist lounge is from four large coves recessed into the ceiling and from two smaller circular coves one at each side of the room.

Corridor lighting throughout the ship is most even and is from spaced direct cornice fittings in the angle of the outer wall and the top deck each fitting holding one 2-ft. 20-watt fluorescent lamp.

The cabin class lounge, aft on the Upper Deck, is lighted mainly from a large rectangular cove giving indirect lighting from tungsten lamps with supplementary lighting from standard lamps in the windows on each side of the room. The lighting of the cabin class library and writing room is from an indirect fitting in the centre of the room with screened lamps on the writing tables using 40-watt tubular lamps.

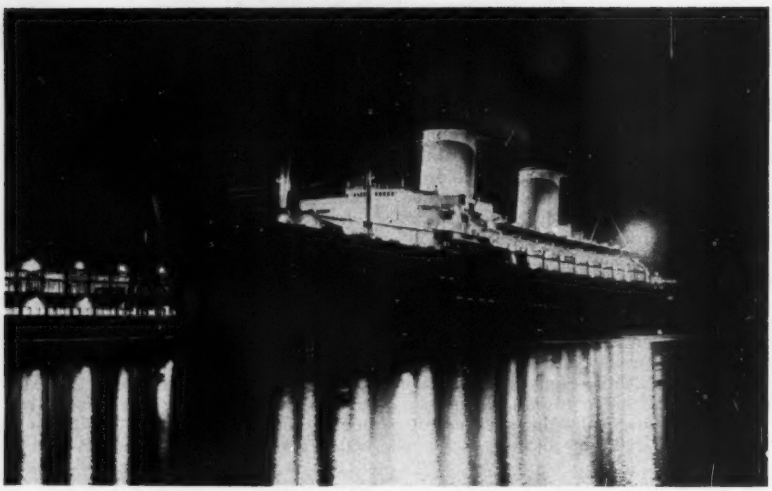
Indirect lighting from tungsten lamps in cornices is again used in the cabin class smoking room with flush spotlights to accentuate the bar. In the tourist smoking room flush ceiling panels give direct light from filament lamps.

The dining rooms are all on "A" Deck. The centre part of the first class dining room rises to the height of two decks, the flanking sections being only of single deck height. A double cove gives indirect lighting in this higher part and a single indirect cove runs the length of the two lower sections of the room. Tungsten lamps are used in these coves and also in the table lamps. Four

A hall on "A" deck showing one of the recessed troughs giving indirect fluorescent lighting

recessed spotlights in the ceiling pick out the sculptured mural at one end of the room and the serving table at the other end is also spotlighted. Concealed filament lamps in cornices are also used in the other two dining rooms.

It will be seen that the majority of the lighting on the *United States* is indirect from filament lamps with fluorescent lighting only in foyers, corridors and shops, thereby contrasting with recent practice in this country where both hot and cold cathode lighting have been used extensively in new and refitted ships.



By night at Southampton

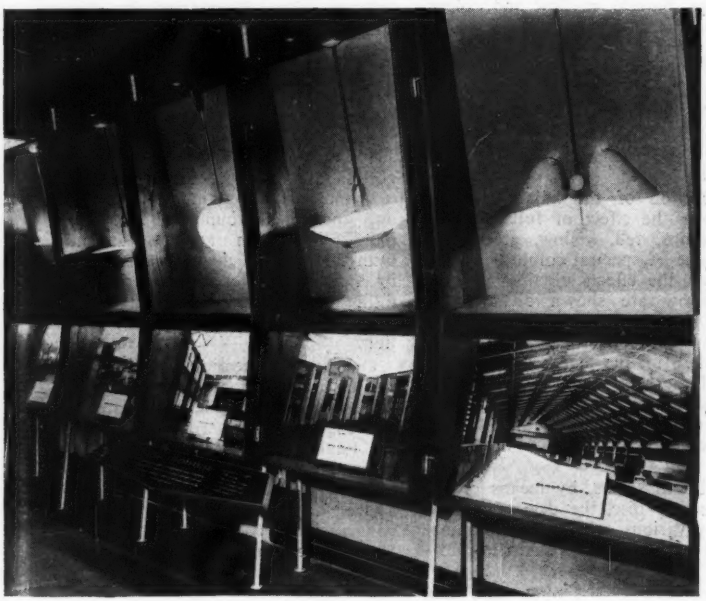
Lighting at the Building Centre

The opening, on July 10, of the E.D.A. Electrical Section at the Building Centre in Store-street, Bloomsbury, is of interest to the lighting world as well as to the building and architectural professions. It has never been a simple matter, in an electrical exhibition, to allot space fairly among the various applications of electricity, and lighting has not always received the space and attention it deserves by virtue of its importance in everyday life and of its contribution to the revenue from electricity supply. There is all the more reason, therefore, to congratulate the organisers and designers of the Section for the very reasonable provision made for lighting in relation to other claims, and for the thoughtful use made of it.

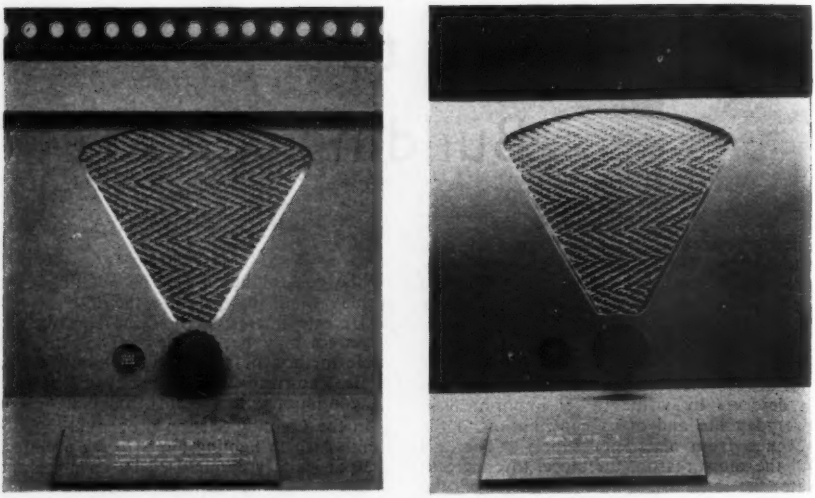
The lighting of the section as a whole has several features of interest, one being the use of the B.R.S.-type factory louvres for part of the general lighting. The addition of a display motif by painting the louvres red will create interest even if the approval of engineers may be qualified. The stretched cable method of supporting lighting fittings is also shown together with a typical system of continuous fluorescent troughing.

In the Lighting Section proper the opportunities which lighting offers to the architect are particularly emphasised by an ingenious and space-saving display of natural colour transparencies. These are on the outside of hexagonal drums which revolve continuously showing the illustrations successively in wall openings. The transparencies are illuminated by fluorescent lamps at the drum centres.

On the opposite wall is a feature devoted



One of the lighting display panels showing types of fittings and light distributions with photographs of typical installations



The left-hand picture shows the appearance of a textured surface illuminated by fluorescent lighting normal to the surface. The right-hand picture shows that fluorescent lighting directed across the fabric can create sufficient shadow for delineation of form.

to the relation between light and colour. The effect of the four major "whites," viz., filament lamps, natural, mellow and colour matching fluorescent lamps, can be compared on a range of colours by switching on different lamps in adjacent booths. The arrangement is duplicated in a lower pair of booths, in which the dividing partition is slotted to allow visitors' own samples to be simultaneously viewed under the different lamps.

The top section of the adjacent booth similarly shows the effect of full coloured fluorescent lamps, red, yellow, green and blue on a range of spectral colours. In the bottom section the effects obtainable from coloured shadow are shown on a white background, the shadows being produced by means of two wood dowels on a spider, aligned parallel to the bank of coloured lamps and of the same diameter, which can be rotated to produce a changing kaleidoscope of colour. The principles of subtractive colour mixing are thus also shown.

The next booth shows, by means of the well-known sector disc, the degree of light absorption by various colours, the illumination reflected from different coloured sectors being shown on a lightmeter.

In the end booth a similar disc and sector mask shows the change in the appearance of a range of well-known textures when illuminated by fluorescent lamps, one lighting the surface normally and one at an acute angle. The shadow control possible with fluorescent lamps is clearly illustrated and, it is to be hoped, will put an end to the "shadowless light" bogey.

The five major light distribution categories are shown by another feature containing five lighting fittings "halved" into their background so that the actual light distribution appears around each fitting. Point is given to the classification by a photographic enlargement below each fitting illustrating a lighting installation employing that particular form of distribution.

Opposite this feature, and leading out of the lighting section, is a rear illuminated 20-ft.-long transparency in natural colour, showing the view across the Thames from the Bankside Power Station. The startling effect of space and realism created emphasises a use of lighting which will particularly appeal to architects, and illustrates the particular effectiveness of fluorescent lamps for such applications.

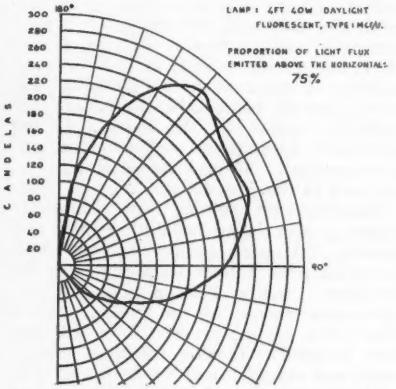
The electrical section was designed by Mr. Hulme Chadwick, A.R.C.A.

Garage Inspection Pit Lighting

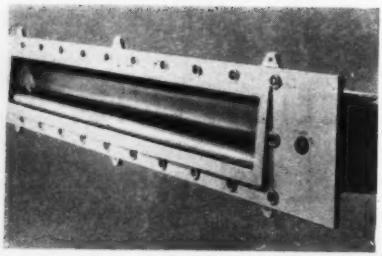
Details of two examples of lighting for the inspection of the underneath of public transport vehicles.

The new transport depot for Bournemouth Corporation at Castle-lane, Bournemouth, has many points of interest for engineers and architects. For example, the barrel roof covers the large area of 150 ft. by 300 ft. without any supporting columns to interfere with the free movement of the buses. Another interesting feature is the inspection pit, which runs the full length of the building. Only inspection and very minor adjustments are carried out in this pit, major repairs being undertaken elsewhere.

To allow the maintenance staff to make a thorough examination of the underside of a trolley bus without using hand-lamps a high standard of illumination must be provided in the pit. The use of fluorescent lamps in heavy duty fittings was suggested, but earlier trials with 5-ft. 80-watt lamps had revealed that such an installation was liable to cause trouble through excessive brightness contrasts between the fitting and its immediate background. Considerable visual discomfort often resulted, due to this cause and to the variation in brightness between the underside of the vehicle and the other parts of the field of view. It seemed probable that the use of a smaller lamp would lead to more comfortable seeing conditions, and the use at Bournemouth of fittings each containing one 4-ft. 40-watt lamp has proved that this surmise was indeed correct. The 300-ft. long pit is lighted by 41 fittings in a staggered arrangement, the lamps being set 16 in. below floor level. Although illumination intensities are not the sole criterion in such



(Above) Light distribution of the fitting used at the Bournemouth bus depot. (Left) A view of the actual pit.



(*Above*) *Fitting used in the installation at Bournemouth.*

(*Right*) *Arrangement of fittings in one of the pits at Camberwell.*

installations, at several important positions the values have been found to be of the order of 20 lm./ft.^{2}. Seeing conditions are excellent, all important parts are clearly visible, and the amount of glare present is small and causes no discomfort. It is most noticeable when a man is working directly above one of the fittings; in such instances visibility is better when this particular unit is switched off, but whether a mechanic will normally appreciate the value of this apparently paradoxical act is, of course, problematical. Siemens lamps and fittings are used in this installation.

Inspection pit lighting with fluorescent lamps is also being installed in the new London Transport garages and in those converted from former tram depots in the Executive's South London tram to bus conversion scheme. All the fittings, totalling over 1,650, for the garages concerned have been designed to London Transport requirements and manufactured by the G.E.C. Ltd.

The fitting takes a 3-ft. 30-watt lamp, and is so arranged that when mounted on the pit wall the light is directed upwards to illuminate the mechanism of the bus. Pits used for major inspections at 18-week intervals are inter-connected by a communicating passage, which divides each pit into a front and rear portion. Four fittings are mounted in the rear section, illuminating the transmission and rear axle; and two fittings in the front section light the underside of the engine and adjacent parts of the bus. Glazed tiles give full value to the illumination.

Other pits, used for nine-week inspections, terminate in a wide communicating area at one end, and are equipped with six fittings each. In all pits the fittings on opposite walls are staggered so that the lighting of the underside of the bus is uniform.

Although the lower parts of the pit walls on which the fittings are mounted are recessed, protection is provided against oil as well as tools falling down on to the fittings. The 5-16th inch armour plate front glass is therefore cemented to the front cover of the fitting and sealed. An oil-resistant rubber gasket is provided between the front cover and the body of the fitting. Body and cover are of die-cast aluminium with a grey anti-corrosion finish.

The lamp is mounted in clips on the front of a white stove-enamelled reflector, and is connected to the supply by means of rubber push-on lampholders. The choke, capacitor and terminal block are attached to the back of the reflector plate; a bracket for the starter socket is mounted on the plate at such an angle that access is given to the starter by removing a circular cover on the underside of the fitting body. A soft rubber gasket renders the joint between cover and body proof against entry of moisture.

A New Showroom

The new showroom at the Courtney Pope Works, Tottenham, has been designed as a complete section of a store, and good use has been made of the space which appears much larger than it is in actual fact by the clever use of mirrored walls.

The lighting fittings shown include several entirely new fittings, and use has been made of some of the fittings from the existing display range, the object being to show as many types of fittings as possible suitable for the "Frenger" heated ceiling which has been employed without spoiling the original conception.

The new fittings include recessed troughs, which are interchangeable with the aluminium panels of the ceiling and are readily removable, thus giving flexibility of the lighting design, as is necessary in the modern store which is constantly changing its style of merchandising.

The store fittings themselves are illuminated both internally and with external perimeter lighting, whilst the "Visiflow" counters are also internally illuminated.

Lighting engineers and others interested in store and display lighting are welcomed at these works at any time to view the lighting fittings, store fittings or "Frenger" heated ceiling.

(Above) General view of the new Courtney, Pope showroom.

(Left) One of the exhibits incorporating spot-lighting.

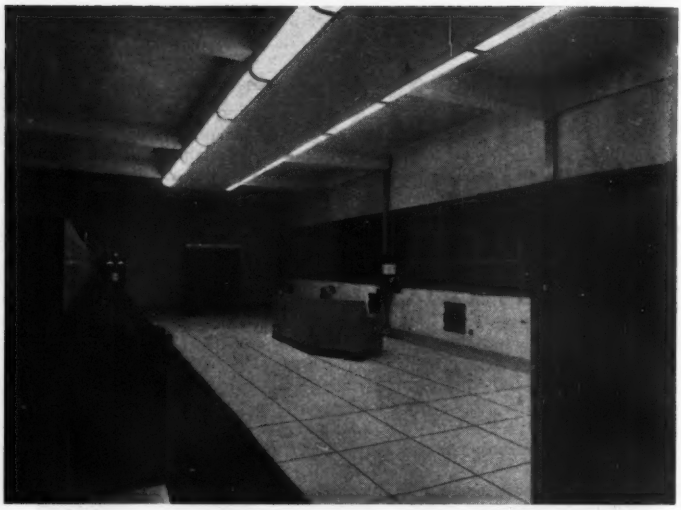
New Lighting Installations

An Office Lobby

The recent conversion of the office building of Webb and Knapp Co., of Madison-avenue, New York, included the installation of lighting in the lobby as an integral part of the architectural design. Formerly overcrowded and unsightly, the entrance hall has now been converted into an ultra-modern glass-fronted lobby, over 37 ft. high with a sloped hexcrate ceiling, which extends downward and backward from the top of the large plate-glass windows to the level of the lift corridors.

The hexcrate is composed of six-inch hexagonal cells arranged in honeycomb strips. This ceiling, as well as the lighting

The office lobby, showing the hexcrate ceiling, behind which is installed a colour-change lighting system.



Lighting improvements have recently been carried out to the plans of the B.T.H. Co., Ltd. at the British Enka Ltd. rayon factory. The control room (right) has 16 three-lamp "Perspex" enclosed fluorescent fittings mounted on both sides of a central false panel running the length of the ceiling.

behind it, is hung from an intricate network of horizontal and vertical channels, the latter following the curve of the hexcrate all the way down.

Changing coloured light, electrically controlled by the daylight, shines through the hexcrate ceiling. The system installed can produce fixed patterns of light, changing and merging patterns and other combinations and special effects. Over 500 different colour-tones can be produced and colour effects and changes can be preset and arranged for various time-cycles.

Batteries of lighting strips electrically divided into 48 unit areas illuminate the hexcrate ceiling from behind. Each unit is approximately 25 sq. ft. in size, but these unit areas have no counterpart in the hexcrate ceiling itself, which is seen as one complete area. The lamps for each unit area are grouped on four circuits to provide the colours red, green, blue and white by use of glass-colour filters.

There are a total of 1920 reflector lamps in this colour lighting installation giving a total connected load of 288,000 watts. The colour change control is so designed that at no time does it require an operating load of more than 220,000 watts; the average working load is approximately 170,000 watts. The installation was designed by Mr. R. Gillespie Williams, who himself invented the colour-change system.

Foundry Lighting

Locomotive wheel centres, traction motor castings, and track links for tanks, excavators, and cranes are products in which the steel foundry division of K. and L. Steelfounders and Engineers, Ltd., Letchworth, specialise. The cold cathode lighting in the foundry where they are made was installed after the company had studied various methods of lighting in different parts of the factory. Cold cathode lighting, originally adopted as an experimental replacement for tungsen illumination, is now being extended to the remainder of the foundry, and has also been installed in a steel store.

The fittings were mounted above the crane rails at a height of 16 ft. and 24 ft. from ground level. It will be seen from the illustrations that the use of an almost continuous light source has reduced shadows under the crane to an absolute minimum, eliminating the necessity for additional lighting under the crane. Sixty-six fittings are arranged in two rows with a 25-ft. spacing between rows. The installation is planned for an average illumination through life of 8 lm./ft.^{2} at floor level.

In the steel store 18 G.E.C. open-top cold cathode fittings supplied by the British Central Electric Co., Ltd., have been installed in three rows of six at a mounting height of 28 ft., giving an average illumination through life of 10 lm./ft.^{2} at floor level.

(Left) the cold cathode lighting in the foundry at K. and L. Steelfounders and Engineers Ltd., reduces the shadows under the crane to a minimum.

(Right) Cold cathode lighting in the steel store of the same factory.

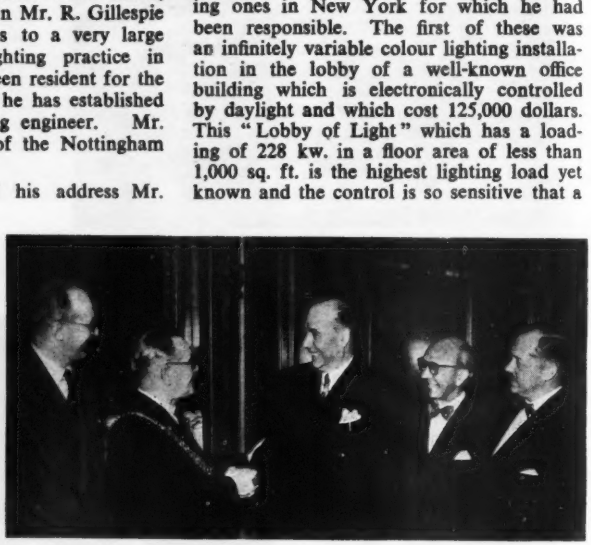
I.E.S. ACTIVITIES

Nottingham

A special meeting of the Nottingham Centre, to which members of kindred societies in the East Midlands were invited, was held on July 10, when Mr. R. Gillespie Williams gave an address to a very large audience on current lighting practice in America, where he has been resident for the last six years and where he has established a reputation as a lighting engineer. Mr. Williams was chairman of the Nottingham Centre in 1945.

During the course of his address Mr. Williams referred to the exceedingly high standard of illumination in all types of premises and instanced minimum values of 50 foot-candles in corridors. The reflector spot lamp, which is available in 16 different types was, he said, extensively used and it was not customary to enclose them in any type of fitting; they are in fact used outdoors in waterproof lampholders. Mr. Williams went on to say that the American public are very colour conscious and where fluorescent lighting is used the tendency is to make the fittings an architectural feature of the building. He expressed a personal opinion that there was too much shadowless lighting, which caused discomfort and that it was desirable to have various degrees of illumination which "exercised" the eyes in the same way as light and shade in natural light when out of doors.

Mr. Williams discussed a number of lighting installations, including two very interesting ones in New York for which he had been responsible. The first of these was an infinitely variable colour lighting installation in the lobby of a well-known office building which is electronically controlled by daylight and which cost 125,000 dollars. This "Lobby of Light" which has a loading of 228 kw. in a floor area of less than 1,000 sq. ft. is the highest lighting load yet known and the control is so sensitive that a cloud passing over the sun alters the settings. The other installation is in the office of a business executive and is designed to enable him to blend artificial light with daylight and alter the quality to suit his taste at any hour of the day or night. It has a loading of 33 kw.



Mr. R. Gillespie Williams visiting the Nottingham Centre. (Left to right) Mr. G. C. Small (past chairman), the Lord Mayor of Nottingham, Mr. R. Gillespie Williams, Mr. C. S. Caunt (Centre chairman), and Mr. N. C. Slater (vice-chairman elect).

Dow Prize Competition

Intending entrants for the Dow Prize Competition are reminded that the closing date for entries is November 30. This competition is open to students of lighting and allied subjects and is primarily intended for students working in collaboration. There is still time in the three months remaining for the preparation of entries; full details can be obtained from the I.E.S. secretary.

C. & G. Examination Results

The results of the City and Guilds of London Institute examinations in illuminating engineering, which were held earlier this year, are given below:—

INTERMEDIATE GRADE

LONDON:
First Class.—Bond, Miss D.; Bowl, M. D.; Bradshaw, W. R.; Brown, A. G.; Cabuché, R. F.; Cooper, L.; Davies, I. F.; Hanney, D. C. E.; Harvey, A. T.; Keen, P. E. R.; Price, W. A.; Rowlands, E; Smith, G. I.; Wingrove, A. G. *Second Class.*—Gore, L. F. R.; Hildred, J. F.; Hookway, P. T.; Jury, D. H. H.; King, F.; Knutton, A. B.; Noble, W. A. P.; Philpot, B. W. J.; Shanks, R. J.; Stockton, C. S.

BIRMINGHAM:
First Class.—Pratt, R. A. *Second Class.*—Edwards, G. O.

SHEFFIELD:
Second Class.—Varney, W. A.

GLASGOW:
First Class.—Lindsay, J. *Second Class.*—Pickup, J. F.

BRISTOL:
Second Class.—Neill, E. F.

LIVERPOOL:
First Class.—Burslem, H.

MANCHESTER:
First Class.—Sculthorpe, D.; *Second Class.*—Bayliffe, C. S.; Birchenough, F. J.; Clayton, F.

LEICESTER:
First Class.—Bird, A. E.

NOTTINGHAM:
Second Class.—Edyshaw, J.; Hart, C. F.; Rutherford, N. S.

RUGBY:
First Class.—Ackerman, K. R. *Second Class.*—Birkett, G.

LEEDS:
First Class.—Laycock, H. *Second Class.*—Robinson, A.; Walker, D.

FINAL GRADE

(*Parts* 1 *and* 2)

LONDON:
Second Class.—Bird, R. T. H.; Cooper, L. P.; Moody, A. H.; Turbin, A. H.

BIRMINGHAM:
Second Class.—Holden, A. C.

CARDIFF:
Second Class.—Stallworthy, D. A.

LIVERPOOL:
Second Class.—Bicket, J. H.

LEICESTER:
Second Class.—Coates, W. C.

(*Parts* 1 *and* 3)

LONDON:
First Class.—Powley, M. J. *Second Class.* Bird, R. T. H.; Bronsdon, R. D.; Broome, N. R.; Clark, D.; Collier, B. D.; Dickinson, A. J.; Doo, S. A. W.; Furness, B. M.; Joskey, R. C.; Rooke, H. W.; Sillett, M. F.; Stansfield, F.

BIRMINGHAM:
Second Class.—Holden, A. C.

CHESTERFIELD:
Second Class.—Millington, F.

LEEDS:
Second Class.—Milner, E.

BELFAST:
First Class.—France, R. W.

DUBLIN:
First Class.—O'Neill, G. H.

Courses, 1952-53

Courses in illuminating engineering arranged for the coming winter are as follows:—

London: Courses for the Intermediate and Final examinations are available at the Borough and Northampton Polytechnics as follows:—

Borough Polytechnic: Intermediate part-time day course Thursday afternoons and evenings. Final course for parts L and 3 on Tuesday and Wednesday evenings; also part-time day course Monday afternoons and evenings.

Northampton Polytechnic: Intermediate course on Tuesday and Wednesday evenings. First year of Final course on Monday and Thursday evenings; second year of Final course on Thursday evenings.

Belfast: Intermediate course beginning on September 24 to be held on Wednesday evenings from 7.30-9.30 at the College of Technology. The course will be spread over

two years, students being prepared for the City and Guilds examination in May, 1954.

Nottingham: Courses for the Intermediate and Final examinations will be held at the Nottingham and District Technical College, the Final course being for two years. Details of the courses are not yet available but those wishing to take part in either course should contact the Registrar of the College at Shakespeare-street, Nottingham. Enrolment day is September 8.

Manchester: At Manchester College of Technology the first year of a two-year course for the Intermediate examination will be held. A special series of ten lectures under the title of "Recent Advances in Lighting Practice" will also be held at the College on Wednesday evenings from October to December, the first lecture being on October 8. Details of the City and Guilds course and the special course of lectures may be obtained from the College.

Other Centres: Other courses will be arranged at the Stow College, Glasgow, the College of Technology and Commerce, Leicester, and the Bootle Technical College, provided sufficient students are forthcoming.

Correspondence Courses: Courses for the Intermediate and Final examinations are made available by the British Institute of Engineering Technology (Shakespeare House, 17-19, Stratford-place, Oxford-street, London, W.1), and are recommended in particular to intending candidates unable to attend lecture courses at approved centres. The fee for the Intermediate course complete is £6 10s. inclusive of textbooks; for the Final, £7 inclusive. A combined course for the Intermediate and Final is £12 10s. inclusive. When students are already qualified in certain basic subjects proportionate reductions can be made.

Special Courses: A practical course in Colorimetry and Spectrophotometry, under Prof. W. D. Wright, is to be held at the Technical Optics Section of Imperial College at South Kensington, beginning on November 3. The course is a full-time one and will last for four weeks. If necessary, the course will be repeated, subsequent courses beginning on February 2 and May 4. The fee for the course is eight guineas. Applications for admission or fuller details should be addressed to the Registrar of Imperial College, Prince Consort Road, S.W.7.

A special course of 30 lectures on elements of electric lighting practice is to be held at the South-East London Technical College, Lewisham, beginning on October 23. The course is intended for electrical contractors, architects, showroom assistants, etc. The fee is £1.

Correspondence

To the Editor, LIGHT AND LIGHTING.

Discussions on Papers

Sir,—I have always thought that the method of conducting the so-called discussion at the end of a paper presented to learned and other bodies is, in many instances, most unsatisfactory.

Cassell's New English Dictionary defines "discuss" as to debate; to consider or examine by argument.

Surely no one will maintain that when a succession of members of an audience raise points and thoughts and then, when all have spoken, the author or authors reply or do not, as they think fit, this constitutes a debate or examination by argument.

In some cases one has to wait until the paper and "discussion" are printed and circulated to read the most unsatisfactory comments on what has been said.

To me, Sir, a discussion should be a real one, the lecturer giving his views on matters as they are raised and thus permitting subsequent speakers to supplement or disagree with what he has said. This is the system that has operated most successfully and produced really lively discussions during courses and at lectures organised by the Lighting Service Bureau, and I am sure it would help us to get more value from our papers were the I.E.S. and other bodies to follow this example.—Yours, etc.,

London. C. R. BICKNELL.

Correction

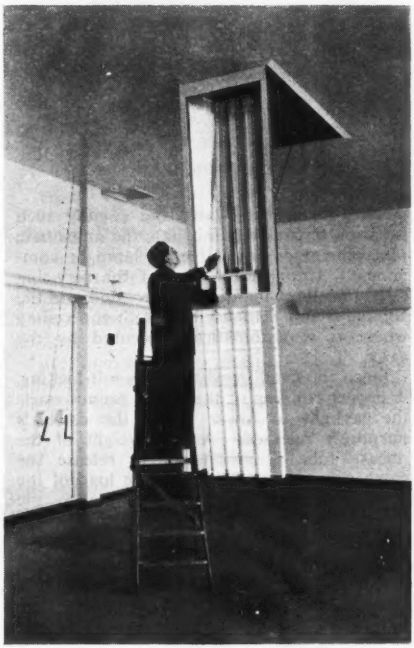
Mr. M. N. Waterman, of the Westinghouse Electric Corporation, has pointed out an error in our report (July, p. 253) on the paper he gave at the recent meeting on the Association Française des Eclairagistes. The performance figures for the 400-watt mercury fluorescent colour corrected lamp should have been given as 45 lm./watt and the life as 5,000 hours. Our apologies to Mr. Waterman and readers. Incidentally, we gather that the life of this lamp has now been officially re-rated at 6,000 hours; in due course, no doubt, the figures we arrived at as a result of our poor French and appalling mathematics will be correct. Westinghouse seem to be wasting no time in trying to reach our target.

Lighting Fittings

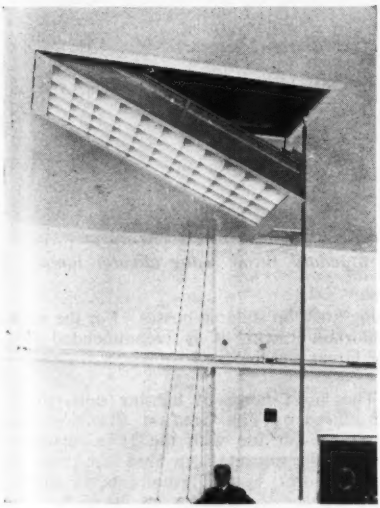
To ensure that the lighting equipment installed in a large B.E.A. control room could be effectively and simply maintained without hindering operations by the control personel, the EDISON SWAN ELECTRIC CO., LTD., co-operated with the architect to produce an original type of recessed louvred ceiling laylight which should also prove extremely useful for other installations where the use of ladders might be dangerous or a nuisance.

The laylight consists of a fixed outer frame in which is hinged a sub-frame carrying the lamps and reflectors. The hinged frame has a louvre fitted within it as a sliding extension which opens progressively as this frame is opened. Similarly, when closing the laylight the louvre is retracted as the hinged frame swings upwards. The whole operation of opening or closing the hinged frame and lowering or raising the louvre is automatically controlled as one sequence in either direction by the operation of a self-sustaining hand winch.

In the closed position the unit is secured at its free end by an automatic catch and has the appearance of a quite normal recessed louvred laylight.



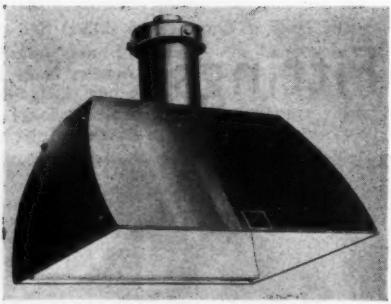
Fitting in fully open position.



Recessed louvred fitting being lowered by hand winch.

When the unit is to be opened for cleaning or relamping the catch is released simply by hooking on to it an end-loaded light alloy tube and, as the winch is rotated, the laylight frame and extension louvre section swings down to the vertical position. When the louvre section reaches the bottom of its slide the lamps and interiors of the unit are readily accessible and, if desired, the louvre section can be easily detached.

The instant start control gear is mounted directly on the steel structure of the ceiling in the form of unit assemblies each feeding one lamp. Special plug and socket connections to the supply and lamps permit the



Benjamin race-track fitting.

service engineer to carry out rapidly such isolation tests as will facilitate the immediate replacement of any defective lamp or component. Upon completion of the servicing operation the winch is again rotated and the complete unit retracts flush with the ceiling where it is automatically secured by the catch.

Since the catch mechanism is self-locking, improper winding of the winch cannot cause the laylight to lower unless the catch is purposely released. As the weight of the release tube is insufficient to release the catch unless it is relieved of the load of the fitting by the proper use of the winch, the risk of accident or damage is safeguarded.

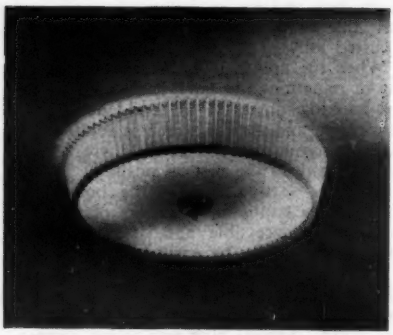
The principle of operation, which depends only on a simple winch and pulley gear, is applicable to all sizes of louvred or glazed laylight fittings and the cost is proportional to the size of fitting involved.

THE BENJAMIN ELECTRIC, LTD., have now produced a lighting fitting equally suitable for greyhound race tracks and speedways, and one which is in advance of earlier models, both for design and performance.

Deep screening of the lamp provides comfortable and clear vision of the race, and at the same time, the light is specially directed over the track for good uniformity. The light control is such that only one row of fittings is necessary over a track, and where the two types of track adjoin, it is possible, with a suitable swinging pole, to use only one row of fittings to be swung over the track in use.

The fittings are designed for use with either 1,000-watt or 1,500-watt general service lamps, G.E.S. porcelain lampholders being fitted on suitable bosses. For the more important tracks, it is recommended that the larger size be used.

Standard fitting using circular lamp.



G.E.C. ceiling fitting using circular fluorescent lamp.

The latest range of lighting units to be introduced by THE GENERAL ELECTRIC CO., LTD., are for use with the 16-in. diameter circular fluorescent lamp and are suitable for the home, hotels, restaurants, or wherever a decorative fluorescent fitting housing a lamp of medium light output is required.

The first few models in the new range comprise ceiling and pendant units and a

floor standard. The simplest design is a ceiling fitting, the basis of which is a cream-coloured metal spinning which houses the control gear and at the same time supports the lamp. A more elaborate variation on this theme is a fitting which incorporates with the same metal spinning a white-flashed opal-glass disc below the lamp and a pleated paper diffuser. This model is available either as a ceiling or a pendant fitting.

A particularly attractive model is the floor standard in West African agba wood finished to a natural walnut colour, with brass relief. The shade is pleated paper and the circular lamp is screened from below by an obscured glass disc.

BUSINESS OFFER

The Proprietors of British Patent No. 587,924, "Improvements in Illuminator Shields," desire to enter into agreement by way of Licence or otherwise on reasonable terms to ensure its full development and practical working in Great Britain. Enquiries in the first instance should be addressed to A. A. THORNTON & Co., Napier House, 24/27, High Holborn, London, W.C.1.

FOR SALE

Alternating Set for sale. Motor driven on baseplate. Input 70 h.p. 1,500 r.p.m. 440 D.C. Output 400 volts, 1 phase, 50 cycles, 36 K.V.A. Starter panel with shunt regulator and A.C. voltmeter. — F. J. Edwards, Ltd., 359, Euston Road, London, N.W.1. EUSton 4681.

PERSONAL

Mr. A. W. GOSTT has been appointed Light Group Sales Manager (Technical) for Philips Electrical, Ltd., as from July 1. He has been with the firm since 1929.

Mr. IAN QUIGLEY has been appointed Sales Manager (Export) Lamps and Lighting for the B.T.H. Co., Ltd.

Mr. E. E. FARADAY has resigned his position with W J. Furse and Co., Ltd., of Nottingham, and joined the Lighting Department of Franco-British Electrical Co., Ltd.

Mr. BEVERLEY PICK has been appointed to advise on decorative illuminations in connection with the Coronation for the G.E.C., Ltd.

POSTSCRIPT

By "Lumeritas"

The criticism of concrete street lamp standards, which was ventilated in the daily Press some months ago, has been continued recently by the Earl of Crawford and Balcarres. Addressing the Institute of Public Administration, the noble Earl said that these standards were among the most damaging innovations which local authorities had introduced to some towns and villages. "They may be just bearable," he is reported as saying, "on trunk roads, but they are out of place in narrow streets and small towns. Is there any beauty in a dying swan with a broken neck; an illuminated pig-trough; or a hooked nose with a phosphorous drip on the end? These are, after all, the designs of these concrete standards." Lord Crawford is a trustee of the British Museum, the National Gallery and the National Trust. It is only fair to add that there are admirers of these lamp standards, but the fact is that in some situations they are incongruous.

An examinee, asked to say how the luminance of a diffusing surface can be found given the illumination of the surface in lumens per square foot, and also to say in what units the luminance would be expressed, correctly answered that if he knew the reflection factor of the surface the product of this and the illumination would give the numerical value of the luminance. But, as the reflection factor is a mere ratio and the illumination is in lumens per square foot, it was said that their product must be expressed in lumens per square foot. Was the examinee really very "dumb" because he thought lumens per square foot should still be so called after their number is multiplied by a constant instead of then being called foot-lamberts?

Some interesting remarks on lighting occur in an article by E. L. Gale on architectural problems of shell concrete construction. The articles was published recently in *The Architects' Journal* (August 14). Mr. Gale points out that "the beauty of a shell roof lies in the unobstructed roof space and one of the major problems confronting the architect is to see that, after having taken the trouble to construct a roof from which truss members have been eliminated, he does not proceed to clutter it up." Hitherto, says the author, "far too little use has been made of the shell as a light reflector: so many otherwise pleasant shapes have been ruined internally by some form of pendant dropped from the shell and terminating with a series of reflectors in tungsten lighting or horizontal lines of fittings for fluorescent tubes which, though practical as a light source, serve to give a depressing tunnel effect at night. Effective lighting has been obtained by fixing *bare* fluorescent tubes in continuous lines to the soffit of the shell with the chokes grouped together on the stiffening beams. Again, batteries of tubes have been mounted, *unobtrusively*, on either side of valley beams, casting the light upwards to give a very effective diffused light. Some of the paint manufacturers have produced distempers with a high reflective value." The italics are mine. I remember seeing, during the war, a new factory with a shell roof on which bare fluorescent tubes had been mounted, and so good was the result that everyone thought the factory very well lighted without noticeing that artificial lighting was in use.

Some time ago the question of allowing football matches to be played under floodlighting was being considered by the Football Association. Floodlighting is already used for practice games, and it is interesting to note that a cricket match was played recently with this form of lighting, which is installed at the Highbury football ground. Owners of television sets may have watched the match as the B.B.C. televised it one night early in August. Looking into the future, may we foresee the time when the familiar expression "bad light stopped play" will no longer have to be used?

The Association Française des Eclairagistes is preparing a code for the lighting of buildings, and I have had an opportunity of perusing a draft of this interesting document. The Association bases the rules it puts forward, and the illumination levels it recommends, on the current British I.E.S. Code. This is a tribute to the value and soundness of our own Code, which is now so widely known and accepted as a guide to good lighting practice. If the French code is adopted substantially in the form of the draft, this will be a notable step towards achievement of international agreement in the important matter of lighting recommendations.